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(56) Documents Cited
GB 2264532 A GB 2119434 A GB 1137878 A
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(54) Adjustable hinge assembly

(57) An adjustable door hinge assembly (10) comprising a first part (12) mountable on a door, a second part (14) mountable on a door frame, a hinge pin (16) pivotally connecting the first and second parts (12, 14), and adjustment members (18) movably mounted on the first part (12) to act on the hinge pin (16) to enable adjustment of the relative positions of the first and second parts (12, 14), and hence the door and the door frame. The hinge pin (16) extends down a passage (26) having an elongate cross-section. The adjustment members (18) define a circular aperture (36) through which the pin (16) extends. A series of three grooves (38) are provided in opposite peripheral sides (40) of each member (18). These are selectively cooperable with corresponding protrusions (30) on the first part (12). The adjustment is provided by moving the members (18) linearly along the respective passage, using the grooves (38) and protrusions (30) to retain them at the desired position.

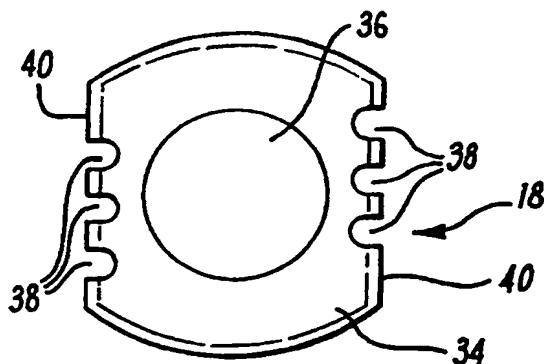


FIG. 3

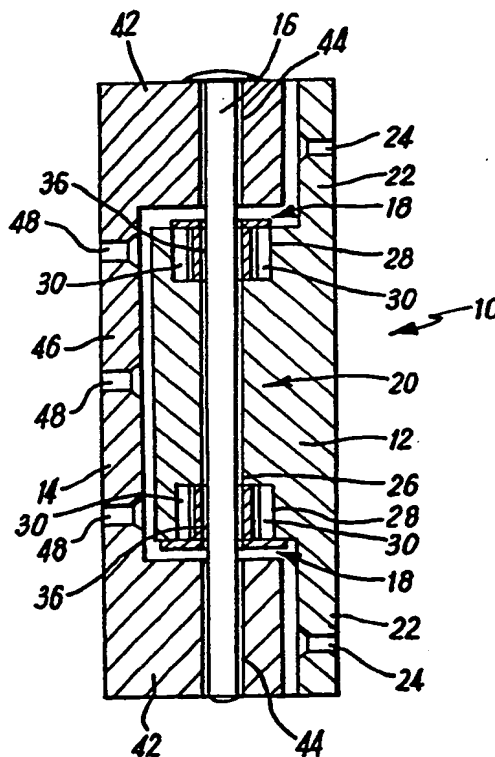


FIG. 1

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1990.

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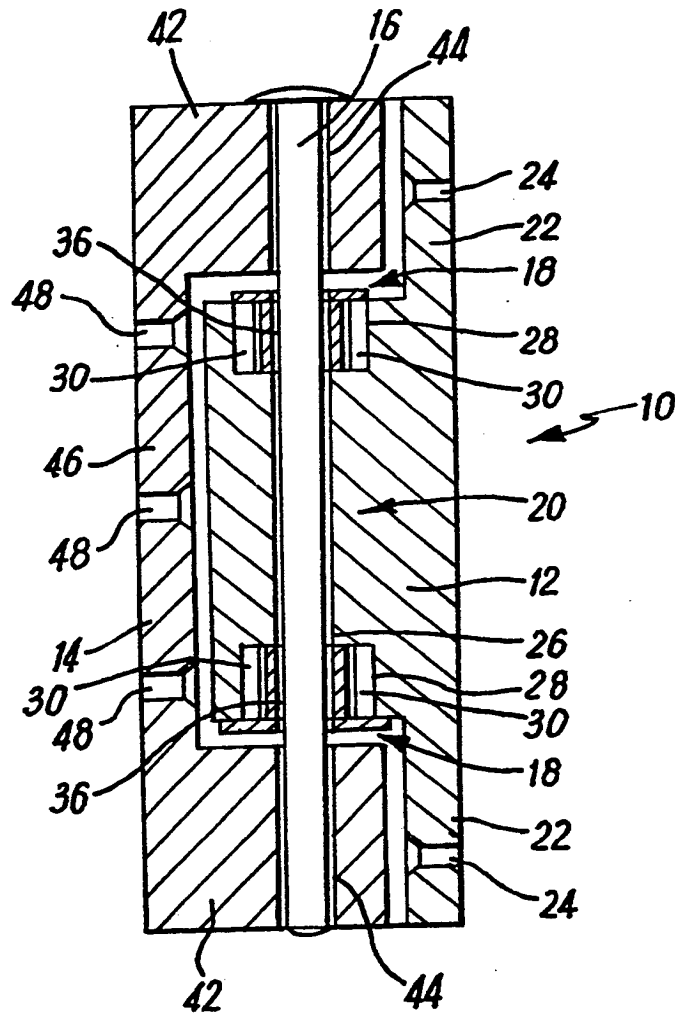
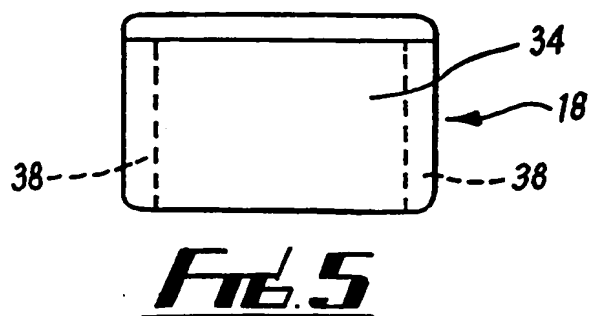
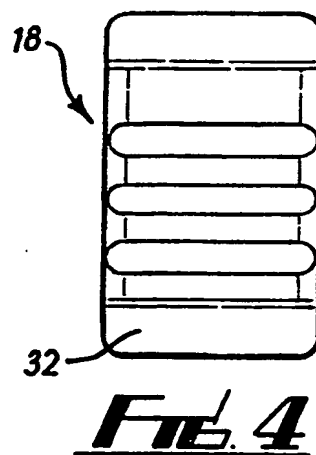
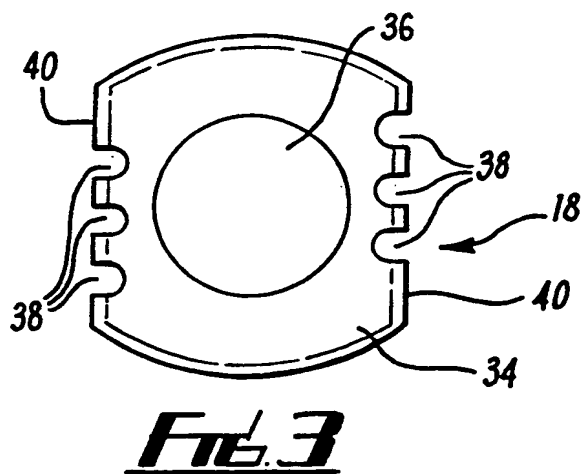
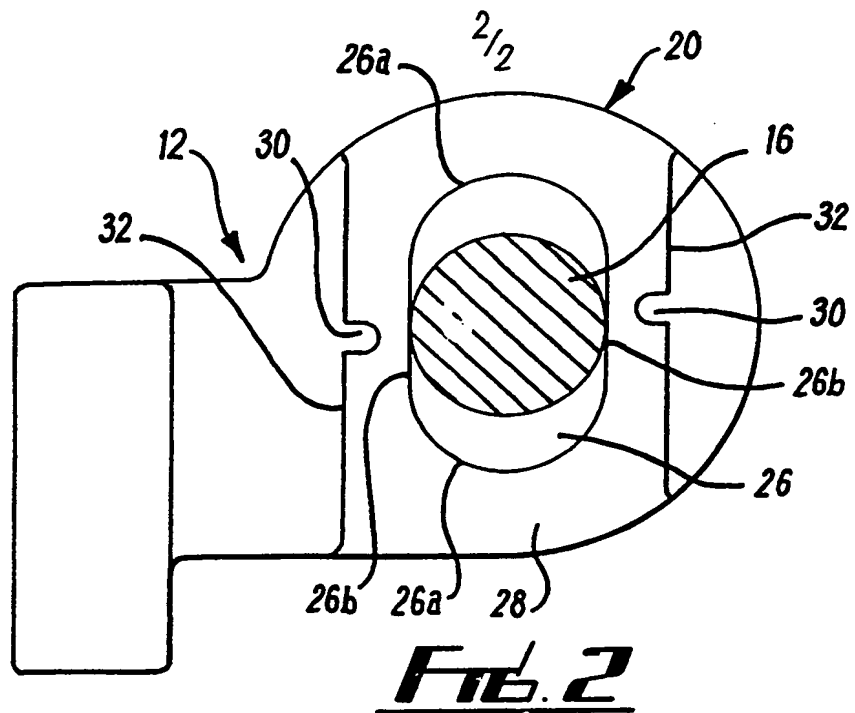


FIG. 1



Hinge Assembly

The present invention relates to hinge assemblies, particularly but not exclusively to a hinge assembly for hinging a door to a door frame.

Often when a door is hingedly mounted on a door frame, adjustment of the position of the door relative to the door frame is necessary.

It is an object of the present invention to provide a hinge assembly to enable adjustment of the relative positions of two members pivotally connected together.

According to the present invention there is provided a hinge assembly comprising first and second parts pivotally connectable by connecting means, and adjustment means removably mountable at selectable positions relative to the said parts to set the relative positions of the said first and second parts when the assembly is assembled.

The adjustment means and one of the parts preferably have corresponding formations which are cooperable to retain the adjustment means in a selected one of a plurality of positions on the said one part whereby to provide the said adjustment. The positions are preferably generally linearly aligned. The

adjustment means preferably acts on the connecting means.

Preferably the formations comprise one or more protrusions extending from one of said adjustment means or one part and a plurality of corresponding recesses formed in the other of said one part or adjustment means.

Alternatively or additionally, the formations may comprise one or more recesses formed in one of said adjustment means or one part and a plurality of corresponding protrusions provided on the other of said one part or adjustment means.

Preferably the said one part comprises a portion through which a passage extends. Preferably one or both ends of the passage are adapted to receive an adjustment means. The or each end may comprise a recess in which an adjustment means is locatable. The formations on the said one part are preferably provided in the recess. The formations preferably comprise protrusions extending down opposing sides of the recess. Preferably the protrusions are not aligned.

Preferably the adjustment means defines an aperture which has a cross-section aligned with the passage in the first part when the adjustment means is in any of the

said positions on the first part. Preferably, in use, the connecting member, such as a hinge pin, extends through the aperture in the or each adjustment means and the said passage. Preferably the passage in the one part is enlarged relative to the aperture in the adjustment means, desirably the passage is elongate in cross-section, in the direction of the linear adjustment.

Preferably the adjustment means comprises a plurality, desirably three, of recesses formed in opposite sides thereof. The plurality of recesses in one of said sides of the adjustment means is preferably out of alignment with the recesses in the other side. Preferably the adjustment means is so shaped to be locatable in the recess in both a first and second orientation, wherein the adjustment means is moved between the said orientations by turning through approximately 180°.

Preferably the second part defines a further passage, which in use is aligned with the passage in the said first part and through which the connecting member extends to pivotally connect the first and second parts. The second part preferably comprises two spaced portions, each defining a part of the passage through the second part of the assembly. Preferably, in use, the first part

is partially located between the said portions of the second part.

Preferably the connecting member is an elongate member, preferably of round cross-section. The connecting member may comprise a head portion to prevent passage of the member completely through the said passages.

According to a further aspect of the present invention there is provided a hinge assembly as described above, for pivotally connecting two members together, the first and second parts each providing means for connection to a respective one of said members. The means may comprise apertures formed in the said first and second parts, to enable securing members to pass through the apertures and into the respective member, to secure the part to the respective member. The securing members may be screws or other threaded members.

An embodiment of the present invention will now be described by way of example only, with reference to the accompanying drawings, in which:-

Fig. 1 is a cross-sectional view of a hinge assembly according to the present invention;

Fig. 2 is a plan view of a first part of the assembly of Fig. 1;

Fig. 3 is a plan view of an adjustment means according to the present invention;

Fig. 4 is a side view of the adjustment means of Fig. 3; and

Fig. 5 is a front view of the adjustment means of Fig. 3.

Referring to the drawings there is provided an adjustable hinge assembly 10 comprising a first part 12, a second part 14, a hinge pin 16 pivotally connecting the first and second parts 12,14, and adjustment means shown generally at 18 and removably mounted on said first part 12 to act on the hinge pin 16 to enable adjustment of the relative positions of the said first and second parts 12,14.

In more detail, the first part 12 comprises a cylindrical portion 20 and two mounting portions 22 at either end thereof. Countersunk apertures 24 are provided in the mounting portions 22 to enable the first part 12 to be secured, for instance by screws, to a first

member, for example a door (not shown).

A passage 26 extends down the cylindrical portion 20. The passage 26 is generally elongate in cross-section (as can be seen from Fig. 2) to enable the adjustment as will be described. The passage has generally semi-circular end walls 26a connected by straight sides 26b.

A recess 28 is provided in the cylindrical portion 20 at each end of the passage 26. The recess 28 is generally rectangular, in the direction perpendicular to the length of the passage 26. Spline protrusions 30 extend into the recess 28, from opposing sides 32 thereof, and extend parallel to the length of the passage 26. The splines 30 are off-set relative to one another and to the central axis of the passage 26.

The adjustment means 18 (see particularly Figs. 3, 4 and 5) comprise a body 34 which is generally rectangular in plan and elevation and has a central circular aperture 36 extending therethrough. A series of three grooves 38 are provided in opposite sides 40 of the adjustment means 18. The grooves 38 are off-set relative to one another and are shaped to be complementary to the protrusions 30 on the first part 12. The adjustment

means 18 may be made of plastics material.

The adjustment means 18 can be located in the recesses 28 by sliding the means 18 into the recess, with the splines 30 engaging a correspondingly spaced pair of grooves 38. The circular cross-section of the aperture 36 then lies wholly within the cross-section of the passage 26, but the relative position of the two cross-sections changes according to the choice of grooves 38 engaged with the splines 30.

The second part 14 comprises two spaced portions 42 each defining mutually aligned passages 44. The spaced portions 42 are connected by a mounting portion 46 comprising countersunk apertures 48 through which securing means such as screws (not shown) may act to secure the second part 14 to the other member, for example a door frame.

In use, the first and second parts 12,14 are secured to respective members to be hingedly connected, for example a door and a door frame. The adjustment means 18 are placed in the respective recesses 28, the tightness of fit being sufficient to retain the lower means 18 in position. The spline protrusions 30 locate in a pair of the grooves 38. The door is then offered to

the door frame, such that the cylindrical portion 22 is interposed between the spaced portions 42, and the passages 44, are aligned with the apertures 36 and passage 26. The hinge pin 16 is then located through the passages 26,44 and apertures 36 as shown in Fig. 1. The door is then hingedly mounted to the door frame.

If adjustment of the position of the door relative to the frame is necessary, then the pin 16 is removed, and the first and second parts 12,14 are separated. The adjustment means 18 are then removed from their existing position and replaced in another of the predetermined positions, by locating the splines 30 in a different pair of grooves 38. Adjustment of the position of the adjustment means 18 moves the position of the apertures 36 relative to the passage 26. However, the elongate shape of the passage 26 ensures that in all of the predetermined positions of the adjustment means 18, the passage 26 can receive the hinge pin 16 located in the apertures 36.

It is to be further appreciated that if required, the adjustment means 18 can be rotated through 180° parallel to the length of the hinge pin 16, so that the recesses 38 that were engaging a spline 30 on one side 32 of the recess 28, now engage a spline 30 on the opposite

side 32. The off-set configuration of the splines 30 and grooves 38, enable further adjustment relative positions of the aperture 36 and passage 26 to be attained in this way.

Once the adjustment means 18 have been located in the desired positions, then the door can be re-mounted on the door frame as described above.

It is to be appreciated that the assembly of the present invention can be used to pivotally connect any type of members together, for example a window to a window frame.

Various modifications may be made without departing from the spirit or scope of the present invention. For example, any number of corresponding recesses and protrusions may be provided, of any suitable shape. Furthermore, the direction of the elongate passage 26 and the adjustment may be altered according to the particular application of the assembly.

Whilst endeavouring in the foregoing specification to draw attention to those features of the invention believed to be of particular importance it should be understood that the Applicant claims protection in

respect of any patentable feature or combination of features hereinbefore referred to and/or shown in the drawings whether or not particular emphasis has been placed thereon.

CLAIMS

1. A hinge assembly comprising first and second parts pivotally connectable by connecting means, and adjustment means removably mountable at selectable positions relative to the said parts to set the relative positions of the said first and second parts when the assembly is assembled.

2. An assembly according to claim 1, in which the adjustment means and one of the parts have corresponding formations which are cooperable to retain the adjustment means in a selected one of a plurality of positions on the said one part whereby to provide the said adjustment.

3. An assembly according to claim 2, in which the positions are generally linearly aligned.

4. An assembly according to any preceding claim, in which the adjustment means acts on the connecting means.

5. An assembly according to any of claims 2 to 4, in which the formations comprise one or more protrusions extending from one of said adjustment means or one part and a plurality of corresponding recesses formed in the other of said one part or adjustment means.

6. An assembly according to any of claims 2 to 5, in which the formations comprise one or more recesses formed in one of said adjustment means or one part and a plurality of corresponding protrusions provided on the other of said one part or adjustment means.

7. An assembly according to any preceding claim, in which the said one part comprises a portion through which a passage extends.

8. An assembly according to claim 7, in which one or both ends of the passage are adapted to receive an adjustment means.

9. An assembly according to claim 8, in which the or each end comprises a recess in which an adjustment means is locatable.

10. An assembly according to claim 9, in which the formations on the said one part are provided in the recess.

11. An assembly according to claim 9 or claim 10, in which the formations comprise protrusions extending down opposing sides of the recess.

12. An assembly according to claim 11, in which the protrusions are not aligned.

13. An assembly according to any of claims 7 to 12, in which the adjustment means defines an aperture which has a cross-section aligned with the passage in the first part when the adjustment means is in any of the said positions on the first part.

14. An assembly according to claim 13, in which the connecting member extends, in use, through the aperture in the or each adjustment means and the said passage.

15. An assembly according to any preceding claim, in which the connecting member is a hinge pin.

16. An assembly according to any of claims 13 to 15, in which the passage in the one part is enlarged relative to the aperture in the adjustment means in the direction of the linear adjustment.

17. An assembly according to any preceding claim, in which the adjustment means comprises a plurality of recesses formed in opposite sides thereof.

18. An assembly according to claim 17, in which three

recesses are formed in each side.

19. An assembly according to claim 17 or claim 18, in which the plurality of recesses in one of said sides of the adjustment means is out of alignment with the recesses in the other side.

20. An assembly according to claim 17, 18 or 19, in which the adjustment means is so shaped to be locatable in the recess in both a first and second orientation, wherein the adjustment means is moved between the said orientations by turning through approximately 180°.

21. An assembly according to any of claims 7 to 20, in which the second part defines a further passage, which in use is aligned with the passage in the said first part and through which the connecting member extends to pivotally connect the first and second parts.

22. An assembly according to claim 21, in which the second part comprises two spaced portions, each defining a part of the passage through the second part of the assembly.

23. An assembly according to claim 22, in which the first part in use, is partially located between the said

portions of the second part.

24. An assembly according to any preceding claim, in which the connecting member is an elongate member.

25. An assembly according to any preceding claim, in which the connecting member is of round cross-section.

26. An assembly according to any preceding claim, in which the connecting member comprises a head portion to prevent passage of the member completely through the parts.

27. An assembly according to any preceding claim, in which the first and second parts each comprise means for connection to a respective member, such that in use the assembly pivotally connects the members.

28. An assembly according to claim 27, in which the means comprises apertures formed in the said first and second parts, to enable securing members to pass through the apertures and into the respective member, to secure the part to the respective member.

29. An assembly according to claim 28, in which the securing members are screws or other threaded members.

30. An assembly substantially as hereinbefore described with reference to the accompanying drawings.

31. Any novel subject matter or combination including novel subject matter disclosed, whether or not within the scope of or relating to the same invention as any of the preceding claims.

Relevant Technical Fields

- (i) UK Cl (Ed.M) E2F (FAC)
(ii) Int Cl (Ed.5) E02F (5/14, 7/00, 7/04)

Search Examiner
S J CHURCH

Date of completion of Search
20 MAY 1994

Databases (see below)

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

(ii) ONLINE DATABASES: WPI

Documents considered relevant following a search in respect of Claims :-
1-30

Categories of documents

- X:** Document indicating lack of novelty or of inventive step. **P:** Document published on or after the declared priority date but before the filing date of the present application.
- Y:** Document indicating lack of inventive step if combined with one or more other documents of the same category. **E:** Patent document published on or after, but with priority date earlier than, the filing date of the present application.
- A:** Document indicating technological background and/or state of the art. **&:** Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages		Relevant to claim(s)
X	GB 2264532 A	(HARDWARE & SYSTEMS) Note the bushes 12	1, 2, 4-15, 20-29
X	GB 2119434 A	(WORCESTER PARSONS) Note the bushes 20, 22	1, 2, 4-15, 17-29
X	GB 1137878 A	(SCHURMANN) Note the bush and see page 2 lines 74-84	1, 2, 4-7, 13-15, 17-21, 24, 25 and 27-29
X	EP 0223186 A2	(HAPS) Whole of document	1-29
X	DE 003418138 A1	(HAHN) See especially Figure 3	1, 2, 4-7, 13-15, 17-21, 24-29

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).